WHAT IS CLAIMED IS:

1. A method of making a insulating material used as a thermal insulating layer, comprising the steps:

providing a first permeable structure having a contacting surface;

providing a second permeable structure parallel and at a distance away from the first permeable structure thereby defining a first void between the first and second permeable structures;

placing geometric shapes in the void between the first and second permeable structures;

providing a impermeable restraining structure parallel to the second permeable structure a distance away from the second permeable structure and opposite the first permeable structure defining a second void between the second permeable structure and the impermeable structure;

poring into the void between the second permeable structure and the impermeable structure one of a binder/filler particle slurry or a binder medium; and

applying pressure in the void between the second permeable structure and the impermeable structure forcing the slurry through the second permeable structure and around the geometric shapes filling in any voids adjacent the geometric shapes and being forced against the first permeable structure.

2. The method of according to claim 1 further comprising the step of, compacting the geometric shapes in the first void between the first and second permeable structures after placement of the geometric shapes in the first void.

3. The method of according to claim 1 further comprising an extracting member located perpendicular and adjacent to the first permeable restraining structure in direct contact with the geometric shapes wherein the extracting member and the second permeable member defines the first void .

4. The method of according to claim 3 wherein the step of applying pressure further comprises forcing the slurry into the second void through the first permeable structure around the geometric shapes and against the extracting member.

5. The method of according to claim 4 wherein the step of applying pressure and forcing the slurry against the extracting member thereby causing capillary wicking of the liquid from the slurry due to the extracting member and further extracting any excess liquid from the slurry.

6. The method of according to claim 5 further comprising the step of removing the insulating material from the chamber and drying in the insulating material at a drying temperature for an amount of time to dry the insulating material to a green state.

7. The method of according to claim 6 further comprising the step of firing the insulating material after the drying step at a temperature at least to 1200°C for an amount of time to produce a matrix binder.

8. The method of according to claim 6 wherein the steps of drying the insulating material further consists of heating the ceramic material.

9. The method of according to claim 8 wherein the heat drying and firing steps occur at a temperature between 120°C and 1600°C degrees and for an amount of time between 2hrs and 12hrs.

10. The method of according to claim 8 wherein the step of drying and firing wherein the temperature is ramp up at a rate between 5 degrees per minute and 10 degrees per minute up to between 120° C and 1600° C.

11. The method of according to claim 1 wherein the first and second permeable structure and the impermeable structure are formed in a geometric shape dependant upon the use of the ceramic material as a thermal insulating layer.

12. A method of making a ceramic material, formed into geometric shapes and used as a thermal barrier layer, comprising the steps:

providing a permeable structure having a first surface;

providing a fibrous material adjacent to the first surface of the permeable structure;

providing a porous membrane parallel and at a distance from the fibrous material, wherein the porous membrane and fibrous material defines a sphere chamber;

placing hollow spheres into the sphere chamber;

providing a impermeable structure positioned parallel and at a distance from the fibrous material, wherein the porous membrane and impermeable structure defines a slurry chamber;

placing a flowable slurry into the slurry chamber; and

applying pressure into the slurry chamber such that the slurry infiltrates through the porous membrane and around the hollow spheres and against the fibrous material.

13. The method according to claim 12 wherein the permeable structure and the extraction membrane provides a means for capillary wicking of the liquid from the slurry through the extraction membrane.

14. The method according to claim 12 wherein the slurry comprises oxide filler and aluminum phosphate and a liquid.

15. The method according to claim 12 wherein the porous membrane is a perforated sheet of material defining plurality of holes therein having a diameter to allow and even flow of the slurry to pass therethrough and provides an even distribution of the slurry into the sphere chamber around the spheres.

16. The method according to claim 12 wherein the hollow spheres are selected from the group consisting of Mullite, Alumina, Zirconia or any combination thereof.

17. The method according to claim 12 wherein the fibrous material is aluminosilicate fibers.

18. The method according to claim 12 wherein the step of applying pressure is achieved by applying 5 to 20 psi of pressure.

19. The method according to claim 12 further comprising the step of removing the ceramic material from the chamber and drying in the ceramic material at a drying temperature for an amount of time to dry the ceramic material to a green state.

20. The method according to claim 19 further comprising the step of firing the ceramic material after the drying step at a temperature at least to 1200°C for a predetermined amount of time.

21. The method of according to claim 20 wherein the steps of drying the ceramic material further consists of heating the ceramic material.

22. The method of according to claim 21 wherein the heat drying and firing steps occur at a temperature between 100° C and 1500° C degrees and for an amount of time up to 12 hours.

23. The method of according to claim 20 wherein the step of drying and firing wherein the temperature is ramp up at a rate between 2° per minute and 15° per minute.

24. The method of according to claim 12 wherein the permeable restraining structure, the fibrous material, the porous membrane and the impermeable structure forms a geometric shape dependant upon the end use of the ceramic insulating material.